

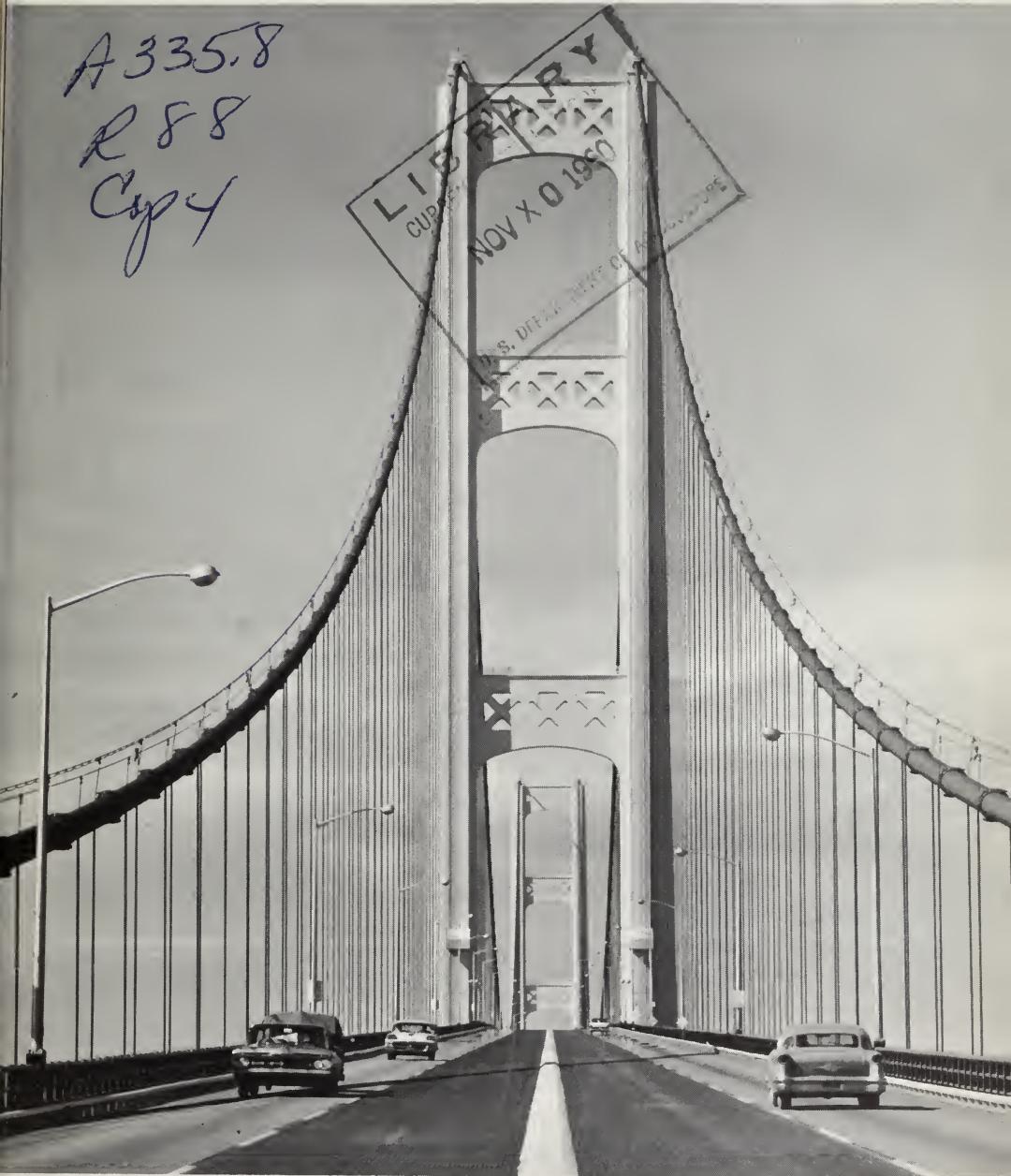
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Rural Lines

RURAL ELECTRIFICATION ADMINISTRATION • U. S. DEPARTMENT OF AGRICULTURE

NOVEMBER
1960



LIFELINE TO PROSPERITY

(See page 3)



A Message from the

ADMINISTRATOR

Many people still think of rural development primarily as a program for encouraging big industries to build branch plants in rural areas.

I'm afraid that this approach may not prove too productive for many parts of the country. It would be far better to think in terms of helping to develop your own home-grown industries and processing plants.

Recently, I ran across a farmer in western Nebraska who is making a good thing out of building air-conditioned cabs for combines. He and his employees work in two buildings behind his barn; his power is delivered over REA-financed lines.

In a small Colorado town, a man with a serious disability has built a large factory for making hydraulic hoists. It employs 300 people. On a Wisconsin farm, two men have built a plant for manufacturing barn cleaners. The factory grew out of a small farm welding shop.

REA borrowers should give all the encouragement they can to local people with big ideas like these. The Federal Government can help, too. For instance, the Office of Technical Services, U. S. Department of Commerce, will make available valuable information for starting various types of industries. A monthly Products List Circular, available free from the Small Business Administration, describes many patents available to small manufacturers through purchase or lease. Help is available once local people have made up their minds to help themselves.

Rural Lines

David G. Samel
Administrator.

Contributors to this issue: Donald E. Cooper, Hubert Kelley, Jr., Bernard Krug, Louisian Mamer, William Baker, Charles Ballard, Barton Stewart.

Cover Picture: View from the south of Mackinac Bridge (Michigan) suspension span. Photo by H. D. Ellis, courtesy of Mackinac Bridge Authority, St. Ignace, Michigan.

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A rural development story

BIG MAC Helps the U.P.

Every car and truck that rumbles over the 5-mile Mackinac Bridge in northern Michigan travels on a life-line of prosperity for the short-of-cash 15-county Upper Peninsula. Heavily forested and a sprawling 300 miles wide and from 40 to 160 miles north to south, the Upper Peninsula has been designated a rural development area. Three of its counties—Mackinac, Delta, and Alger—are rural development counties.

The new bridge, "Big Mac," is a masterpiece of modern engineering. It holds forth a golden promise of better times as it funnels a flourishing resort business to the Upper Peninsula, a scenic wilderness where tourism must be a bulwark of the economy.

Adding impetus to rural devel-

opment in the Upper Peninsula, three REA electric borrowers and one telephone borrower are among the program's chief backers. They are the Alger-Delta Cooperative Electric Association, at Gladstone; Ontonagon County Rural Electrification Association, Ontonagon; Cloverland Electric Cooperative, Sault Ste. Marie; and the Chatham Telephone Company, of Chatham.

REA borrowers serve the large number of motels, tourist camps, lake cottages, ski and hunting lodges, and other related businesses that cater to tourists. Currently, Upper Michigan's gross income from tourists is in the neighborhood of \$140 million a year. That amount is equal to the combined revenues from two of the Peninsula's important in-



Before "Big Mac" opened, houses like this were abandoned on Cloverland lines. Result: idle service, idle investment.

dustries: forestry and mining.

Time was when Upper Peninsula hay was a big business. Clover hay used to be shipped down the Lakes to feed draught horses in Detroit, Chicago, and a host of other places. But the motor age knocked the props from under this bustling hay market. Farms were deserted. Today, however, the area residents are, in a sense, "making hay" again, and that includes the Cloverland Electric Cooperative.

Hay has been replaced by a bumper crop of tourists who are streaming into Michigan's Upper Peninsula in swelling numbers.

"That's why the new bridge made us so happy," says Cloverland Manager Roy W. Wells. "Consumers on our lines have more than tripled in number during the 1950's, and that big increase more than offsets the declining number of farms."

For Cloverland, the "Big Mac" bridge spells tourists and more tourists—a welcome addition to the seasonal consumers who already make up 35 percent of the co-op's load.

"Our load is increasing about 15 percent every year," Manager Wells continues. "Seasonals are becoming increasingly important,

and besides, a lot of them have a way of turning into permanent residents."

The area has a low pollen count, attracting hayfever victims to come early and enticing them to stay late. They begin to come into the area about August 1, and remain until the end of September. Hundreds come from all parts of the country.

Wells can tell by glancing at his office records that "Big Mac" is helping to bring in "seasonals" even during the off-seasons. "We are getting more and more people who come up here only to use cottages on weekends and holidays. This trend toward year-round tourism will probably increase in the years ahead."

But, in 1952, as the number of seasonals on the line began to climb, Cloverland had to take action on a touchy problem—rates. It took a chance on making a few enemies when it instituted a flat year-round rate for seasonals, replacing a strictly seasonal rate.

"We have to make a big investment in providing seasonal service," Wells states. "It takes several years for a co-op to get back that investment."

All was comparatively peaceful among the seasonal colony and no



Cloverland's trim headquarters building is a model co-op structure.

angry hackles were raised. The new rate, surprisingly successful, resulted in only one consumer loss.

The co-op has a pair of new consumers that puts it in clover, compared with the tough times of the recent past. One of them is a dolomite quarry, located on Drummond Island, at the mouth of St. Mary's River on Huron Bay.

The other is its biggest load, a crushed stone quarry on the west side of Drummond Island and a mile across DeTours Passage from the mainland. Hooked up last August, the quarry will have a demand of 3,000 kw a month and will average about 36,000 kwh a day. It produces ten sizes of stone for the chemical, metallurgical, and production trades in the Great Lakes area.

The cable replaced the quarry's steam plant that had a capacity of 3,500 kw in its four generators, but it has brought up another problem. Dragging anchors from

passing ships sometime snag the cable, and the necessary repairs are sometimes costly. But the co-op looks on the bright side—especially the 900 new island consumers it added recently when it laid a cable to Boot Island in Lake Huron.

"Big Mac"—the bridge that is

Manager Roy Wells' pine-panelled office is management center for Cloverland's power network in Michigan's Upper Peninsula.





Dolomite, a compact limestone, is the product of this quarry, the cooperative's largest load. Daily power use will average 36,000 kwh.

helping to transform the Upper Peninsula—is a bridge in more ways than one. It also bridges the economic gap that has plagued this area for too many years, the gap that rural development is trying to close.

Just before the bridge opened, another event took place, equally important to the people of Michigan. That was the opening of the rural development program that mobilized the resources of Michigan State University behind the effort to balance an out-of-kilter rural economy.

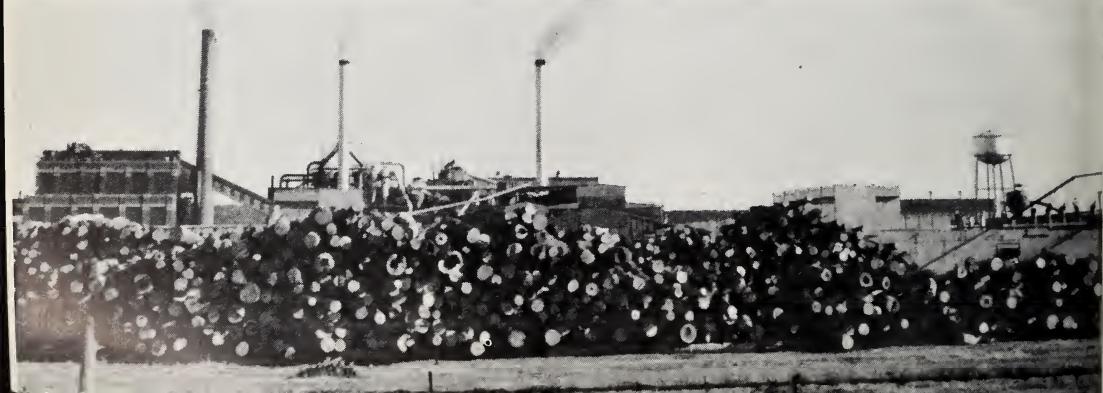
"The original program was designed to serve all segments of the population — farm, town, home, business, and youth," says Dr. Daniel W. Sturt, of the University's Upper Peninsula Extension Center, at Marquette. "We

are developing resources, and we have stressed a self-help community-action program, with the emphasis on local initiative. We put the spotlight on the 'total community'."

Resort business, of course, is the major income-producer, and all forces of the University are being used to develop it. County staffs are assisted by University specialists and, together, they help design and remodel hotel and resort units, train waitresses to improve tourist service, and enroll young people in 4-H club tourist and resort projects.

The tourist business brings nearly \$3 million a week, the year round, to Upper Michigan. The new bridge, rural resources development, and the REA borrowers are joining forces to keep and expand this vitally-needed income.

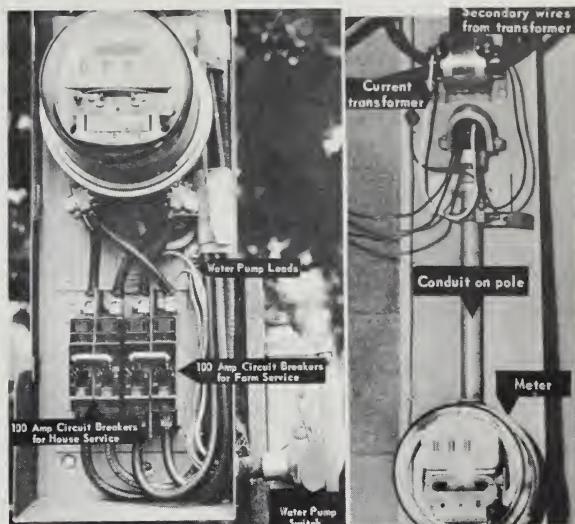
Michigan lumber is reduced to pulp in this Upper Peninsula plant, another big power demand for Cloverland, and another big payroll for the area.



Wiring—boon or bottleneck?

PART I

(Left) Freeborn-Mower photograph of farm installation at Albert Lea, Minn.; (right) display board showing services recommended for heavy use. Photos are used on calls and in newsletter.



WIRING can be a boon or a bottleneck to better living and farming, as well as to system load growth.

Wiring is scheduled again as a year-round promotion in 1961.

Power suppliers consider wiring a key to progress. They use many media and methods to promote it. In planning your program, you may find new ways to turn your main-load bottleneck into a boon for expanded and satisfactory power use.

Interest Getters—Surveys or self-help checklists help. Kentucky co-ops tried a *Housepower Survey*, carried as a co-op newsletter insert in *Rural Kentuckian*. Prize drawings for six major appliances at 1959 annual meetings brought a high return of surveys on member service entrances and wiring needs. Several Kentucky

newsletters also ran *What Is Your Home Electrical Safety Score?*

Words, Pictures—In a subject as complicated as wiring, co-ops use the printed word with illustrations in mailers, take-home pieces, and articles.

Are You in the Dark about Electric Farm Power?—8-page booklet, went to 60,000 rural power consumers in North Dakota. So did *Grounding Is Good Business*, 4-page newsletter insert. These leaflets, as follow-ups of a wiring checklist sent first to co-op directors and then to all members, aroused interest and gave information that improved wiring. And that is just what North Dakota Power Use Council intended its three pieces to do.

Planning Help—Individual con-

tact helps overcome major problems in breaking the wiring bottleneck.

Co-op employees frequently assist members to plan wiring of new structures or unwired farm buildings or re-wiring.

The Sumter Electric Co-op in Florida provides a complete planning service. The co-op borrows the member's set of plans for a few days to make a tailor-made plan to meet individual needs. The co-op publicizes this service at district meetings, in newsletters, and during new-construction service requests.

The Little Ocmulgee EMC, Alamo, Ga., assists members by drawing wiring plans, selecting proper wire size, and giving equipment pointers for a new home, farrowing house, broiler house, or other construction. Pickwick Electric Cooperative, Selmer, Tenn., offers a wiring blueprint service and gives a \$25 cash award when wiring by blueprint passes inspection.

Complaints—Service interruption complaints provide tips on members' wiring problems.

The McDonough Power Co-op of Macomb, Ill., offers to install a breaker on service at material cost only. If offer is not accepted when made at time of first service call, all future calls to restore service due to member's wiring are charged in full to the member.

Indiana's Jackson County REMC sends a qualified employee to investigate when a service interruption results from member's wiring. After allowing reasonable time for correction, the co-op disconnects the responsible part of the member's system when a second outage results from the

same cause.

A number of co-ops get leads on need for wiring improvements with an offer to check low-voltage complaints with a 24-hour run of a recording voltmeter.

Estimates, Loans—Wiring costs money, and it ranks low on the competitive scale of consumer wants. To overcome this, co-ops promote financing of wiring as a long-term property improvement investment. The Codington-Clark



Contractors study adequate wiring diagram prepared by Middle Tennessee EMC for new home.

Electric Co-op, Watertown, S. D., publicizes its loan program for wiring modernization. Many co-ops offer incentives to promote major appliances that require heavy-duty wiring.

Lists of Wiremen—"Who can do our job?" Many rural consumers ask, and finding a man delays many wiring jobs. To solve this problem, many co-ops publish lists of wiremen in co-op newsletters or make names available in the co-op office.

The Hickman-Fulton Counties RECC in Kentucky requires electricians to register and be approved to get listed in its newsletters. Others list wiremen who have a record of good work and regularly do wiring in rural areas.

Inspection—Unless the Safe Wiring label required by law is affixed by the inspector, co-op servicemen must refuse to connect any new or altered service, one borrower informed its members.

Cost of inspection runs \$3.50 or \$4 each for rough-in and final inspection, according to announcements in different Kentucky co-op newsletters. On some co-op systems, each member pays his fee to the inspector, while on others, he pays the co-op, which turns it over to the State Electrical Inspection Bureau with the request for inspection.

Re-Inspection—Free or low-cost re-inspection proves useful in getting members to improve wiring. The Eastern Iowa Light and Power Co-op offers a free appliance and wiring survey by a skilled employee stationed in each area, who recommends changes. Claverack Electric Cooperative in Pennsylvania provides free wiring re-inspection to members who have not had inspection in the past 3 years.

Current Transformer Metering—Heavier usage gives rise to some new practices and some new cost-sharing improvement plans.

The People's Co-op Power Association in Minnesota removes the yard pole and installs a transformer pole, and, if the member

desires it, the new metering assembly (200-amp manual operated disconnect and current transformer metering) at labor-material cost. If new metering is not installed, member bears cost of transferring yard service wire to transformer pole, but may get the metering assembly later for material-labor-transportation cost.

An Iowa co-op returns a \$100 installation fee charged for current transformer metering if wiring is "put in shape." This includes a minimum 100-amp service panel in home, wire size and conduit specified from meter pole to house, and outside wiring specifications outlined by co-op.

Meter Loops—The Clinton County Electric Co-op in Illinois furnishes free a meter loop of over 100-amp capacity when use exceeds 15,000 annually. Iowa's Buchanan County REC suggests that members using over 1000 kwh monthly investigate the co-op's share-the-cost offer, which gives a member a new 100-amp meter loop at \$55.

The Tipmont REMC in Indiana checks and changes out deteriorated service entrance cable and water-tight connector holding cable to meter base at cost plus not more than 10 percent.

(Part II in December RURAL LINES will deal with techniques co-ops use to improve wiring beyond the meter: the expandable wiring program, entrance panel offers, demonstration equipment, consumer meetings, training, and recognition programs.)



RIGHT DESIGN cuts costs

THE handsome modernistic headquarters building of Tri-County Electric Cooperative, Inc., in Carrington, N. Dak., is more than a good example of the rural electric school of architecture. It is also proof in steel, mortar, and brick of how architectural design can reduce over-all construction costs without sacrificing functional efficiency, spaciousness, or structural beauty.

Tri-County Manager E. M. Arntson credits the architect's design—"a design right in the groove"—with savings of some 15 percent in the total costs of Tri-County's new headquarters building, which was completed in 1951. Further, these savings did not represent "penny wise, pound foolish" thrift. Quite the contrary. The architect's design resulted in a perfectly balanced building that provides equal space for the co-op's general offices and auditorium and its warehouse and garage facilities.

In the perfect balance between

the two wings of the headquarters buildings lies the reason for the economies achieved under the co-op's design. Tri-County's headquarters is composed of two rectangles of equal size. Each is 50 by 75 feet, each wing of the building comprising half of the 50 by 150 foot building.

The fact that the two halves or wings are identical structural twins is all-important. This enabled the supplier to furnish steel structural members of exactly the same size for both sections of the building—from bar joists to I-beams. Consequently, the supplier was able to quote substantially lower prices for these structural members. In hard dollars, this meant savings of some \$12,000, Manager Arntson estimates, in overall costs. Total cost of the co-op's new headquarters building was \$79,800. For the building's spacious 7,300 square feet of space, this averaged about \$11 a square foot.

"Besides the savings resulting

from our architect's design, we were lucky in other ways, too," Arntson says. "Bids for constructing our building were opened just before the Korean War broke out. If our bids had been delayed by even a week, our construction costs might have shot up by nearly 25 percent, we were told. This was sheer good luck, of course."

The co-op also got a bargain in real estate. Its site of 2 acres (plus) for the headquarters building cost \$1,200 in an area of rising real estate values. How the co-op bought its site aptly proves the truth of the axiom, "Silence is golden." The co-op simply kept mum about its plans. Negotiating quietly through a friendly third party, the co-op acquired title to the land before local gossip could send site values spiraling upward.

Imitation has been called the sincerest form of flattery. If so, Tri-County has been highly complimented. Six other electric co-ops have borrowed Tri-County's architectural design since construction was completed, Manager Arntson says.

Tri-County's handsomely appointed general offices include a gleaming demonstration kitchen and a laundry. They are available to local homemakers' clubs and other groups. Behind the headquarters building, a large steel warehouse in a fenced-in equipment yard houses plant equipment and miscellaneous items.

Before its new headquarters was built, Tri-County had outgrown two previous offices. Like other electric co-ops over the country, Tri-County has outgrown something else, too—the

business methods and procedures of the past. Today with an investment in electric plant of over \$5.3 million serving some 4,500 consumers, Tri-County is "big business," as Manager Arntson says, and employs the management tools of a modern and growing business.

Tri-County is now in the process of compiling the essential basic data upon which to base a 10-year financial forecast. Manager Arntson is convinced that a graph, like a picture, is worth thousands of words. The co-op is readying graphs on all phases of its operations as an invaluable management tool. These graphs will be shown at meetings of the boards of directors and at annual meetings.

"Boards of directors are decision-makers," he says. "They must have the facts of co-op operations presented clearly and forcefully. I believe that our graphs will do a big job along this line."

Tri-County's new building, says Manager E. M. Arntson, is efficiently planned, economically built.





Women Speak Out at Louisville

INTER-INDUSTRY CONFEREES HEAR VIEWS OF FIRST POWER USERS

"The Electrifying Sixties" was the theme of the Seventh Annual National Electric Farm Power Conference, sponsored in Louisville in September by the Inter-Industry Farm Electric Utilization Council.

For three fact-packed days, an audience of more than 800 delegates, representing all segments of the utility industry, listened to a series of 23 speakers give their version of what the new decade holds in store for power people across the country.

Added emphasis was given this year to the feminine viewpoint. In his keynote address, REA Administrator David A. Hamil said:

"The rural housewife was the

first to apply electricity to her chores, and she was probably the first electric appliance salesman in rural America."

On these pages *RURAL LINES* presents a capsule version of the conference, digests of several speeches, and special interviews with women co-op leaders who told *RURAL LINES* what their co-ops are doing to stimulate women's interest and participation.

Agriculture's Electrifying Future—American agriculture is in the midst of a revolution. We are now manning our agriculture with about 7 percent of our national manpower and managerial talent. This will undoubtedly drop to 5 percent, perhaps even

lower. To supply the necessary food and natural fiber for a whole nation with 5 percent of its manpower is a feat unparalleled in the history of human civilization. Obviously, this achievement rests on two primary developments: education and research reaching right down to the grassroots, and the substitution of mechanical and electrical power for human and animal labor.—*Paul Johnson, editor, "The Prairie Farmer," Chicago, Ill.*

What The New Homemaker Wants—The average young housewife leads a life of quiet desperation in a world of salesmanship claims and counter-claims. What the new homemaker needs most is freedom from confusion. Dealers don't need to fill the homemaker's head with stories of chrome-plated back panels, brand names, or even prices. Just tell her what the appliance will do.—*Jessie Cartwright, home service director, Norge Sales Corporation, Chicago, Ill.*

Southern beauty graced the Inter-Industry podium as Jonnie Flynn McCormac, 4-H winner, delivered a stirring talk on Americanism.



In Louisville, the accent was on youth: Jim Thomas, FFA national president, told the conference that rural young people are fully aware of their responsibility.

Living with Electric Heat—In my personal survey of 15 farms in central Iowa, one family said: "It took us a month to stop arguing with all the thermostats." Most families indicated they wouldn't know how to get better, more even heat, with even the corners warm. This is a new experience to them.—*Naomi D. Shank, home management extension specialist, Iowa State University, Ames.*

Working Together Builds United States—There is a place in this great nation of ours for the private utility industry, for the cooperative enterprise, for the municipal systems, and for federal undertakings. With all four teaming up as a great team, with all sitting at the policy table, with understanding prevailing, there is no doubt in my mind that we can build a greater America, electrically speaking.—*Walter Harrison, president, National Rural Electric Cooperative Association, Millen, Georgia.*

New Patterns in Dealer-Power Supplier Cooperation—The new home market that has developed such momentum, and the whole modernization business which has not yet really gotten off the ground, create for the appliance industry a new situation in dividing appliances into two categories: shopping and non-shopping goods. Shopping goods comprise the free-standing appliances which the consumer comes into the store to purchase. Non-shopping goods represent the built-in products which are purchased as part of a larger package, to become part of a home or home modernization. . . . The Live Better Electrically Medallion promotion is one of the finest sales aids we can have and we can use it to get the builder and consumer thinking electrically.—*William C. Wichman, vice president, General Electric Company; vice president, National Electric Manufacturers Association, Chicago, Ill.*

Progress in Meeting the Appliance Service Challenge—The great need for better service is being recognized by all segments of our industry, and steps are being taken to upgrade the service available throughout the country by stepped-up educational programs. There is no such thing as an unimportant service call. Each call is an opportunity to win a new customer or solidify the loyalty of a regular customer . . . If you would, just once a year, invite in 4 to 6 key account dealers, and have a down-to-earth serious conference with them on how to sell and service better, I'm sure you'd be amazed at the ideas they would bring you. You'd make them your friends forever, because they're human, too, and love to be asked for their views.—*Hardy Rickbeil, vice president, National Appliance and Radio-TV Dealers Association, Worthington, Minnesota.*

Harold H. Beaty (right), secretary of Illinois Farm Electrification Council, discusses IFEC exhibit with Inter-Industry Council Director Abe Becker.



The Co-op Woman's Point of View

(based on interviews with Council delegates)

"Women should be treated as intelligent business partners and be asked to help plan and take part in programs to gain their participation. When a woman appears on an annual meeting program, as I often do, women turn out in great numbers to hear her, for she represents them."—*Genevieve A. Kelley, statewide manager, Minnesota Electric Cooperative, St. Paul.*

"In the statewide, we feel that we help women most by training their leaders and organizing programs their local co-ops can use, such as group purchase of school equipment, our KRECC Better Kitchens Awards Program, and promotions."—*Mary Alice Willis, home economist, Kentucky Rural Electric Cooperative Corp., Louisville.*

"Sho-Me as a G&T co-op, maintains an all-electric kitchen with newest equipment installed at intervals. Electronic range demonstrations create interest, but we cover the whole gamut of uses. We work with women's clubs and lend them films. We demonstrate to homemaking students, who must soon decide what to buy for homes. Other activities are home calls for planning kitchens, heating, lighting; my column—Corner Cupboard; radio talks, training work."—*Grace Allen, home economist, Sho-Me Power Corp., Marshfield, Mo.*

"Women want something that helps them do a better, more interesting job of homemaking.

They like workshops and demonstrations. We cover saving time and energy; correct food preparation, stressing electric cookery; greater comfort, efficiency, and beauty from better lighting; better laundry results from correct use of equipment, water, and detergent for fabric."—*Mrs. Freda Fielder, home economist, Webster Electric Cooperative, Marshfield, Mo.*

"Our co-op provides a club room for meetings of women's groups. Women appreciate this and feel the co-op wants to help them. They like appliance and food demonstrations best."—*Mrs. Helen Burroughs, electrification adviser, Hancock County REMC, Greenfield, Ind.*

"We work with women, but we place main emphasis on youth. Work with 4-H electric projects is very effective, for 4-H'ers learn by doing and teach others by demonstrating. We were proud last year to have a national 4-H award winner, Miss Jonnie Flynn McCormac."—*Mrs. Estelle Chamness, electrification adviser, Marlboro Electric Cooperative, Bennettsville, S. C.*

"Judged by their participation, women like the women's section in our newsletter best, demonstrations next, and then the cake-baking contest. They like demonstrations using special themes rather than general ones."—*Mrs. Wilma C. Jenkins, home economist, Nolin RECC, Elizabethtown, Ky.*



We put our Junior Board to work

By C. R. Darling, President
Y-W Electric Association, Akron, Colorado

We put our junior board to work, and today we have a strong core of loyal, well-informed members in the Y-W Electric Association. More than 50 young men have sat with us at board meetings since 1954, when we initiated the plan for a junior board and gave them a share in the responsibilities of running a rural electric cooperative. These young people and their parents gain a first-hand familiarity with their co-op.

The junior board is the best investment in member relations we have ever made. Each year it brings us greater dividends in understanding and cooperation by members. And these junior directors keep the board on its toes.

Our junior board is selected annually from high school students in their junior year. Each of our nine directors names one member of the junior board, on the basis of character, leadership, school activities, community participation, and scholastic record.

The Y-W co-op has its annual meeting in June. The new junior board is picked just after that, and at the July board meeting, the nine new junior board members and the nine retiring junior board members meet jointly with us. This helps the new appointees get started on their duties.

The first meeting with each junior board is like being on the "Youth Wants To Know" TV program. There are times when we are embarrassed at not having ready answers for all of the questions these young people throw at us. Of course, this keeps us alert. I think all of us do a better job as directors when the junior board sits with us.

Some of our success with the junior board program can be credited to the challenge we give the young men. We never thought of the junior board as a decoration or honorary citation or gimmick. Each director furnishes transportation for his junior designate and rides with him to the meeting and back. We meet

Y-W Electric's first junior board (l. to r.): Gale Crosier, Danny Lewien, Darrell Hutton, Electrification Adviser Chet Farris, Elson Cain, and John Rennes.

together in the same room, the junior board at one table and the co-op's elected board of directors at an adjoining table. These are parallel, just a few feet apart. At right angles to these is a third table where the president, manager, secretary, and attorney sit. Our electrification adviser sits with the junior board. He directs their discussion, answers questions, contributes information when it is needed, and calls for a vote of the junior board when discussion has ended.

The president presides over both the board of directors of the co-op and the junior board. As subjects are introduced, thorough discussion is encouraged at both tables. When discussion of the subject has reached the stage where a vote is taken, the vote is asked for from the junior board first and then from the regular board of directors.

A difference of opinion between the two boards calls for a mixed discussion, which often affects the final decision of the board.

We have great respect for the opinions of the young men who serve on the junior board. We realize that they are quick thinkers and easily absorb any worthwhile knowledge. Members of the junior board get copies of the minutes and operating reports—they see the same material that comes to the board of directors, so they can become familiar with all responsibilities of the board and manager.

We make them aware of our

policies and operating practices in long-range planning, and they are encouraged to contribute suggestions about the power use program, adequate facilities to carry additional electrical load, source of power supply, replacement fund, replacement of plant, and loan repayments.

They learn the principles of cooperative enterprise: Open membership, democratic control, return of net savings to the members in proportion to their patronage, and neutrality in political, religious, and racial matters. From the bylaws they become familiar with their rights and responsibilities as co-op members.

The members of the junior board are always ready to assume their responsibilities, but are greatly surprised to learn how extensive these are. By the end of their year on the junior board, these young men no longer take for granted their rural electric system and the advantages of cheap and abundant electric power for rural living. We think the experience on the junior board makes them realize the struggles their parents went through to get electricity.

Soon they begin to talk about rural electrification and the co-op to their parents, their friends in school, and to their neighbors. Many give talks on their duties before 4-H clubs and other organizations. After completing a term on the junior board and receiving their certificates of service, some of these young people continue to attend occasional board meetings. We encourage this, because we want to prepare them for the day when they will take over and run this Y-W electric association that they will own.



Alert for Smoke in the Sky

Pole lines have to stand up to all sorts of hazards in different parts of the country: wind storms, sleet, floods, snow, lightning, slides, traffic accidents, and fires. In the forest areas of the west, the dry months of the summer keep telephone and electric managers constantly on the alert for smoke in the sky and the ranger's call. When the arrow on the fire danger board swings over to "Explosive," the line crews are ready to go out on a few moments' notice.

The Western Telephone Company, at Weaverville, in northern California, helped combat three forest fires in its service area in a single season. W. Gilman Snyder, president of the company, cooperates closely with the Forest Service in meeting the

fire threat.

He says, "We have a public service here and we try to be prepared for emergencies of all kinds. It is expected of us that we be ready to help in the communities we serve. We have the equipment, the men, and the training."

When the big Trinity Center forest fire swept out of control in July 1959, Manager E. E. Bagley turned one microwave channel over to the Forest Service as the main communications channel for a 5-day struggle which brought 1,200 men and great quantities of equipment and supplies up to the fire-fighting front.

Starting in a smouldering log against which a camper or fisherman had built a campfire, the flames swept through more than 4,000 acres of pine and fir. In the

It cost more than \$50 to replace this pole—not counting the loss in service.

When a forest fire hits the pole line, communications are cut.



mountainous terrain, rangers directed operations with walkie-talkies. Reports were picked up at the telephone company's microwave station just two miles from fire front, relayed through Weaverville, 35 miles to the south, and then carried down to Forest Service headquarters 45 miles further down in the head of the Sacramento Valley.

During the fire, the entire line

crew was on the job maintaining service and replacing poles and line as soon as the ground cooled enough to permit it. Three men with a truck maintained a vigil at the microwave installation to evacuate the equipment if the fire should threaten to engulf the station.

"Fire is the summer hazard here," says Manager Bagley. "We are always prepared for it."

The line crew is on the job before the smoke clears away.



Along the Line



"Christmas tree" pole in North Dakota.

Howler

Subscribers on the lines of the Western Arkansas Telephone Company, at Russellville, Ark., who leave the receiver off the hook get a reminder in the form of a "howler" signal. Lloyd Lipe, district wire chief, has a test board that warns subscribers to replace forgotten receivers. "The signal sounds like some super-sonic creature from outer space," he reports. It is effective and saves installer-repairmen many miles of useless travel.

Christmas Tree

A lineman working on the outside telephone plant in Bowdon, N. Dak., must feel a little bit like an ornament on a Christmas tree. Poles frequently have eight or nine ten-pin crossarms. The pole in the foreground has an old steel farm-machine seat below the bottom crossarm to make things handy for the lineman provided the trouble happens to be on that particular crossarm.

The Dakota Central Rural Telephone Cooperative Association of Carrington, N. Dak., is now constructing new lines in this village of 400 population, to serve about 100 subscribers in town and 100 in the country. Manager Howard R. Wolle of the Dakota Central co-op states that wires on the existing plant are so rusty that he hopes there will be no sleet storms before cutover this winter. Wires enter the existing telephone office through a hole in the wall stuffed with rags.

The Dakota co-op serves nearly 1,000 subscribers in East Central North Dakota.

Film Reviewers

How the modern dial telephone works was explained to school children at Yeoman, Ind., by the Yeoman Telephone Company. After seeing movies on telephony, the children wrote essays on telecommunication which were judged 2 weeks later by the teachers. Cash prizes for the winners were provided by the company.

LaBelle Owner Guy Thorne (left) shows path of tornado to C. W. Chastain, Grand River Mutual general manager.



LaBelle had good neighbors

A small tornado dipped down into the community of LaBelle, Mo., recently. After it passed, trees had fallen across lines. Poles were down; cables broken and drops knocked down. More than half of LaBelle Telephone Company's 500 subscribers were out of service.

The repair would not have been much more than routine to a large company. It required setting four new poles, making seven cable splices and replacing 200 drops. But Manager Guy G. Thorne is just about the whole plant department on the new dial system at LaBelle. Repair looked like an almost endless job, and Thorne wanted to get his subscribers back in service as quickly as possible.

Thorne called V. L. Freeman, REA field engineer, who happened to be at a nearby telephone

meeting with several REA borrowers. Freeman passed the word of the disaster.

By using radiotelephones, C. W. Chastain, of the Grand River Mutual Telephone Corporation, Princeton, Mo., was able to send two cable splicers, a heavy construction crew, and two other linemen within 2 hours. Stanley Hildman of the Mark Twain Rural Telephone Company, Bethel, Mo., furnished two linemen. By 3 o'clock of the second day, all of the LaBelle Company's subscribers were back in service.

Guy Thorne had kind words to say about his good Missouri neighbors, who worked as long as there was light enough to see.

"There is only one of me," said Thorne, "but if you ever have troubles like this, I'll come to help and stay 'til it's all over."

Grand River Mutual men and vehicles were fast-moving repair crew after tornado ripped through LaBelle lines.



New Connector for better splicing



A new connector for splicing plastic-insulated cable insures an electrically and mechanically stable waterproof connection. It can be made in minimum time without removing insulation, pig-tailing, and soldering.

The new connector called Type UR, is the final result of research and development work conducted for the past 6 years at the request of REA telephone engineers.

The connector is made of transparent thermoplastic material, filled with silicone grease, and it contains a small serrated bridge of metal to make the electrical connection. It is simple to make a splice. Wires are inserted into the mouth of the connector. Then a button on the connector sleeve is squeezed with a crimping tool. The button is forced into the body of the connector, which forces the conductors into the metal bridge, and penetrates the insulation to make contact with the conductor. The bridge exerts a constant pressure on the conductor, insuring a strong stable electrical connection. The thermoplastic sleeve insulates and protects the splice, and the factory-installed silicone grease provides a good moisture seal to the joint.

The human element is reduced to an absolute minimum, and good splices can be assured every time.

The connection can be seen through the transparent sleeve, permitting the splicer to see whether the conductors are fully inserted into the connector before crimping.

The connector is designed to hold any two- or three-wire combination of #19 to #26 AWG solid or #20 to #26 AWG stranded wire. It handles all the usual types of insulation. The splice is considered to be the equal of a twisted-soldered joint, and is considerably faster and cheaper.

The crimping tool used is a specially-designed, lightweight hand tool with parallel action jaws, which insure accurate, even depression of the connector button.

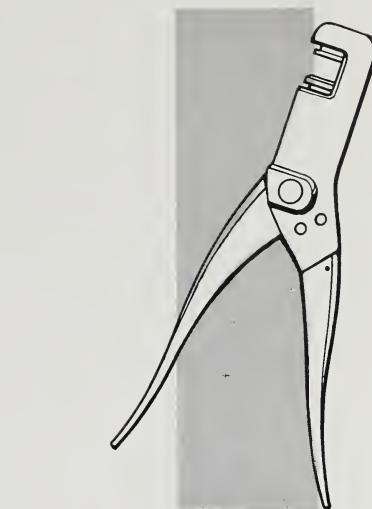
REA's inquiries to the industry began in 1953. In 1957, a model was given a field trial at the Clay County (Ind.) Rural Tele-

James D. Nettles, owner of Pine Belt Telephone Company, in Alabama, examines cable spliced with new plastic connectors after successful field trial on his system.



phone Company. Some defects were noted. Work was continued in the laboratory to overcome the "bugs." In the latter part of 1957, a major field trial was started at the Breezewood (Pa.) Telephone Company. Experience gained from this field trial was satisfactory. However, the compression tool was too large and cumbersome to be practical for field work. It was an expensive pneumatic tool, and a tank of compressed air was needed when crews were splicing. Also, the plastic on the connector was black, without the visibility permitted by the later transparent model.

The UR connectors have been tested in several places under a variety of geographical and climatic conditions. REA's telephone engineers believe that the new connector will improve the



Lightweight crimping tool is used to depress buttons on connectors.

reliability of cable conductor splicing and at substantially lower cost.

Evolution of Plastic Connector—Earliest factory experimental model is at far left. Third from left was given a brief trial at Clay County Rural Telephone Company in Indiana, and the fifth in the row underwent a major trial at Breezewood, Pennsylvania. Numbers 6 and 7 were never used in the field, but the eighth was tried at the Pine Belt Telephone Company, Inc., in Arlington, Alabama, with excellent results. Number 9, on the far right, is the current production model. Round button on top is depressed with crimping tool to make connection.



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Mrs. Paul E. Cox, Sanford, North Carolina, places her first call on the 7,000th telephone installed on the system of the Heins Telephone Company. Installer Reuben Wicker stands by.

"Put Them On The Line . . .

Every new subscriber you connect makes your service worth more to that person's neighbors—to every other subscriber on your system."—Administrator Hamil, October 9, 1960, at the USITA Convention in Chicago.